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EXAMINER	
PHU, SANH D	
ART UNIT	**PAPER NUMBER**
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/698,132	YIP, CHIFAI
	Examiner	**Art Unit**
	Sanh D. Phu	2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,21-27 and 30-37* is/are rejected.

7)☒ Claim(s) *20,28 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive the Amendment filed on 10/26/06. Accordingly, claims 1-37 are currently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 5, 7-19, 23, 27, 30, 31, 33, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (5,483,679), (previously cited), in view of Wolff et al, "Microwave Engineering and System Applications", pages 214-222, published by John Wiley & Son, Inc. in 1988, (previously cited).

-Regarding to claim 1, Sasaki discloses a transceiver (see figure 1) comprising:

a TX path mixer (19) that up converts a signal (QM) to be transmitted (see col. 3, lines 36-45);

a RX path mixer (29) that down converts a received signal (outputted from device (27)) (see col. 3, line 64 to col. 4 line 2); and

a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not disclose a directional coupler comprising an input node coupled to said output of said local oscillator and further comprising a first output node coupled to said TX path mixer and a second output node coupled to said RX path mixer, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

-Regarding to claim 2, Sasaki, in view of Wolff et al teaches that the directional coupler can be configured as an unequal power divider (see Wolff et al, figure 8.12, and page 218, section 8.4.2.2, lines 1-6).

-Regarding to claim 3, in Sasaki invention in view of Wolff et al, Wolff et al teaches that the directional coupler can be configured with a symmetrical structure (e.g., a directional coupler shown in figure 8.12a) and matching all of the four ports to the same impedance (Zo), in such a way that if port (1) is the input, the coupled power appears at the two ports (4) and (3) and almost no power appears at port (2) (see page 218, section 8.4.2.2, lines 1-6). Therefore, it can be derived that since said directional coupler has such the symmetrical structure, if an input signal is inputted at one of the two ports (3) and (4), the coupled power of the input signal would appear at ports (1) and (2) and almost no coupled power appear at the other port of the two ports (3) and (4).

With the above rationale, Sasaki invention in view of Wolff et al teaches that the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port (4) (since in such a case, the reflected signal would appear at ports (1) and (2) of the directional coupler, and almost no coupled power of the reflected signal appear at port (4) of the directional coupler).

-Regarding to claim 5, with the same reason being explained for claim 3, Sasaki invention in view of Wolff et al teaches that the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port (4), or namely, the directional coupler provides an isolation path (via port (3) to port (4) of the directional coupler) from the TX path mixer to the RX path mixer.

-Regarding to claim 7, with the same reason being explained for claims 3 and 5, Sasaki in view of Wolff et al teaches that the directional coupler can prevent single tone desensitization problems since the directional coupler can be configured having such the symmetrical structure to prevent a TX signal from being reflected back into port (3) of the directional coupler to port (4) of the directional coupler on a RX signal at port (4), or namely, the directional coupler provides an isolation path (via port (3) to port (4) of the directional coupler) from the TX path mixer to the RX path mixer so that such the isolation would prevent a transmit signal (QM) (see Sasaki, figure 1) from being reflected back through the directional coupler to a receive signal outputted from device

(26, 27, 29) (see Sasaki, figure 1), which would create the single tone desensitization problems.

-Regarding to claim 8, as similarly applied to claim 2, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configured as an unequal power divider (see Wolff et al, figure 8.12, and page 218, section 8.4.2.2, lines 1-6), or namely, the directional coupler can be configured to provide higher output power for the RX path mixer than for the TX path mixer.

-Regarding to claim 9, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configure to have the directional coupler loss of 3-9 dB (see Wolff et al, page 18, section 8.4.2.2, lines 1-2), namely less than 10 dB.

-Regarding to claim 10, Sasaki in view of Wolff et al does not disclose whether a terminated node of the directional coupler provides a 50 ohm load to absorb a reverse power, as claimed.

However, Sasaki, in view of Wolff et al, teaches that the directional coupler can be configured with a symmetrical structure (e.g., a directional coupler shown in figure 8.12a) and matching all of the four ports to the same impedance (Zo) (typically 50 ohms) (see page 218, section 8.4.2.2, lines 1-6).

Since in Sasaki in view of Wolff et al, port (2) of the directional, as an unused port, is necessary to be terminated by a 50 ohm load in order to match to the same impedance of 50 ohms with the other three ports (1), (3) and (4); therefore, it would have been obvious for a person skilled in the art, within his skills, to implement in Sasaki in view of Wolff et al with a 50 ohm load in such a way that port (2) of the directional, as an unused port, would be terminated by the 50 ohm load in order to match to the same impedance of 50 ohms with the other three ports (1), (3) and (4), as being needed.

With such the implementation, powers (if any, which includes reverse powers) appear at port (2) of the directional coupler would be absorbed by the 50 ohm load as being a match load.

Therefore, with such the implementation, Sasaki in view of Wolff et al teaches the terminated node (2) of the directional coupler provides the 50 ohm load to absorb reverse powers, as claimed.

-Regarding to claim 11, with the same explanation to claims 3 and 5 , Sasaki in view of Wolff et al teaches that the isolation path (via port (3) to port

(4) of the directional coupler) would provide high reverse isolation from a TX path at port (3) of the directional coupler to port (4) of the directional coupler.

-Regarding to claim 12, with the same explanation in claim 10, the directional coupler can be configured in such a way that powers (if any, which includes a reflected signal from the TX path mixer) appear at port (2) of the directional coupler would be absorbed by a 50 ohm load being terminated at port (2) as a match load.

Therefore, with such the configuration, Sasaki in view of Wolff et al teaches that within the directional coupler, the reflected signal from the TX path mixer is absorbed by the matched load of the terminated node (2) of the directional coupler, as claimed.

-Regarding to claim 13, similarly applied to claim 1, Sasaki a method (see figure 1) generating transceiver signals, comprising:

procedure (19) of up converting a signal (QM) to be transmitted via a TX path mixer (19) (see col. 3, lines 36-45);

procedure (29) of down converting a received signal (outputted from device (26, 27)) via a RX path mixer (29) (see col. 3, line 64 to col. 4 line 2) , and

procedure (20) of providing a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not discloses procedure of coupling the output of said local oscillator to an input node of a directional coupler, and coupling said TX path mixer to a first output node of said directional coupler and coupling said RX path mixer to a second output node of said directional coupler, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of

an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

Therefore, Sasaki in view of Wolff et al teaches procedure of coupling the output (PO) of said local oscillator to an input node (port 1) of a directional

coupler, and coupling said TX path mixer to a first output node (port 3) of said directional coupler and coupling said RX path mixer to a second output node (port 4) of said directional coupler, as claimed.

-Claim 14 is rejected with similar reasons set forth for claim 2.

-Claim 15 is rejected with similar reasons set forth for claim 3.

-Claim 16 is rejected with similar reasons set forth for claim 8.

-Claim 17 is rejected with similar reasons set forth for claim 5.

-Claim 18 is rejected with similar reasons set forth for claim 11.

-Regarding to claim 19, as similarly applied to claim 1 set forth above and herein incorporated, Sasaki discloses a device comprising a radio frequency transceiver (see figure 1), wherein the transceiver comprises:

a TX path mixer (19) that up converts a signal (QM) to be transmitted (see col. 3, lines 36-45);

a RX path mixer (29) that down converts a received signal (outputted from device (27)) (see col. 3, line 64 to col. 4 line 2); and

a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not disclose a directional coupler comprising an input node coupled to said output of said local oscillator and further comprising a first output node coupled to said TX path mixer and a second output node coupled to said RX path mixer, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff

et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

-Claim 23 is rejected with similar reasons set forth for claim 3.

-Regarding to claim 27, as similarly applied to claim 1 set forth above and herein incorporated, Sasaki discloses a circuit (see figure 1) comprising:

a TX path mixer (19) that up converts a signal (QM) to be transmitted (see col. 3, lines 36-45);

a RX path mixer (29) that down converts a received signal (outputted from device (27)) (see col. 3, line 64 to col. 4 line 2); and

a local oscillator (20) having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not disclose a directional coupler comprising an input node coupled to said output of said local oscillator and further comprising a first output node coupled to said TX path mixer and a second output node coupled to said RX path mixer, as claimed.

However, in Sasaki, the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff

et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

-Claim 30 is rejected with similar reasons set forth for claim 2.

-Claim 31 is rejected with similar reasons set forth for claim 3.

-Claim 33 is rejected with similar reasons set forth for claim 5.

-Regarding to claim 35, Sasaki in view of Wolff et al teaches that the circuit is an integrated circuit (see Sasaki figure 1).

-Regarding to claim 36, as similarly applied to claim 1 set forth above and herein incorporated, Sasaki discloses a device(see figure 1) comprising:

a TX path mixer (19), (considered here equivalent with the limitation "first means"), that up converts a signal (QM) to be transmitted (see col. 3, lines 36-45);

a RX path mixer (29), (considered here equivalent with the limitation "second means"), that down converts a received signal (outputted from device (27)) (see col. 3, line 64 to col. 4 line 2); and

a local oscillator (20), (considered here equivalent with the limitation "means for generating the mixing frequency"), having an output (PO) providing a mixing frequency for each of said TX and RX mixers (see col. 4, lines 3-7).

Sasaki does not disclose means for coupling the mixing frequency to said TX path mixer "first means" and said RX path mixer "second means", said coupling means providing isolation paths for providing the mixing frequency to the TX path mixer "first means" and RX path mixer "second means", as claimed.

However, in Sasaki, the local oscillator "means for generating the mixing frequency" is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers (see figure 1).

Wolff et al teaches using a directional coupler providing isolation paths for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting

the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

With such the implementation, Sasaki in view of Wolff et al teaches the directional coupler, (which considered here equivalent with the limitation "means for coupling the mixing frequency to said first and second mixing means, as claimed).

-Claim 37 is rejected with similar reasons set forth for claim 3.

4. Claims 4, 6, 21, 24, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Wolff et al, and further in view of Vagher (6,362,685), previously cited.

-Regarding to claims 4, 32, Sasaki in view of Wolff et al does not teach whether the directional coupler operating frequency range is wider, or namely, greater than the output frequency of the local oscillator, as claimed.

However, in Sasaki in view of Wolff et al, the directional coupler operating frequency range is necessary to be the same or wider than the output frequency of the local oscillator for including the output frequency of the local oscillator

the so that the directional coupler can operate at the output frequency of the local oscillator.

Vagher teaches that a directional coupler (200) can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see figures 2 and 3, and col. 5, lines 17-42).

It would have been obvious for a person skilled in the art to implement the directional coupler, in Sasaki in view of Wolff et al, as the one as taught by Vagher, in such a way that the directional coupler operating frequency range of the directional coupler would be wider than the output frequency of the local oscillator, as desired, for including the output frequency of the local oscillator the so that the directional coupler can operate at the output frequency of the local oscillator, as being needed.

-Regarding to claims 6, 21, 24, 34, Sasaki in view of Wolff et al does not teach whether the directional coupler covers dual bands for dual band single output local oscillator configurations, as claimed in claim 6, nor whether the directional coupler is a multi band directional coupler, as claimed in claim 21, nor whether the directional coupler is configured to operate in multiple bands,

nor whether the directional coupler is operable over a plurality of frequency bands for multi band single output local oscillator configurations, as claimed in claim 34.

However, in Sasaki in view of Wolff et al, the directional coupler operating frequency range is necessary to be the same or wider than the output frequency of the local oscillator for including the output frequency of the local oscillator the so that the directional coupler can operate at the output frequency of the local oscillator.

Vagher teaches that a directional coupler (200) can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see figures 2 and 3, and col. 5, lines 17-42).

It would have been obvious for a person skilled in the art to implement the directional coupler, in Sasaki in view of Wolff et al, as the one as taught by Vagher, in such a way that the directional coupler operating frequency range of the directional coupler would be wider than the output frequency of the local oscillator, as desired, for including the output frequency of the local oscillator

the so that the directional coupler can operate at the output frequency of the local oscillator, as being needed.

With such the implementation, since the directional coupler can be configured so that the directional coupler operating frequency range of the directional coupler is wide as desired (e.g., 969 MHz-1306 GHz), wherein the directional coupler can be called here as a multiple band directional coupler, as claimed, a directional coupler having a multiple band falling into its operating frequency range or a directional coupler, as claimed, operating in multiple bands which falls into its operating frequency range; and wherein the directional coupler operating frequency range of the directional coupler is capable of including, or namely covering, two sub-bands which might happen to be dual bands for dual band single output local oscillator configurations, as claimed; or operable over a plurality of frequency bands which might happen to be a plurality of frequency bands for multi band single output local oscillator configurations, as claimed.

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Wolff et al, and further in view of Khanifar et al (2006/0087374), newly-cited.

-Regarding to claim 22, Sasaki in view of Wolff et al does not teach a TX power amplifier for receiving the upconverted signal from the TX path mixer, wherein an output load from the TX power amplifier is not an exact conjugate match to the TX power amplifier output impedance, as claimed.

Sasaki in view of Wolff et al teaches a TX power amplifier device (22) (see Sasaki, figure 1) for receiving the upconverted signal from the TX path mixer and amplifying the upconverted signal and providing the amplified signal to an output load (23, 24).

Khanifar et al teaches a TX power amplifier device (18, 24, 22) comprising a TX power amplifier (24) and an output matching circuit (22) for conjugate matching the TX power amplifier output impedance with an output load for maximizing power transfer to the output load (see figure 2, and [0035]).

Since in Sasaki invention in view of Wolff et al does not teach in detail how the TX power amplifier device (22) is implemented, it would have been

obvious for a person skilled in the art to implement TX power amplifier device (22) being the one as taught by Khanifar et al in such a way that the TX power amplifier device would comprise a TX power amplifier and an output matching circuit for conjugate matching the TX power amplifier output impedance with the output load (23, 24) so that the TX power amplifier device (22) would be obtained as required, and the maximized power transfer to the output load would be obtained.

In Sasaki invention in view of Wolff et al and Khanifar et al, the output load (23, 24) from the TX power amplifier is inherently not an exact conjugate match to the TX power amplifier output impedance so that the output matching circuit is needed for conjugate matching the TX power amplifier output impedance with the output load.

Therefore, as being explained above, with such the implementation, Sasaki in view of Wolff et al and Khanifar et al teaches a TX power amplifier for receiving the upconverted signal from the TX path mixer, wherein an output load from the TX power amplifier is not an exact conjugate match to the TX power amplifier output impedance, as claimed.

6. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Wolff et al and further in view of Ishii (2004/0203734) (newly-cited).

-Regarding to claim 25 and 26, Sasaki in view of Wolff et al does not teach whether the device comprises a mobile terminal or a cellular mobile communication device, as claimed.

Sasaki teaches that the device is the one with small size and light weight for TDMA-TDD radio communications (see col. 1, lines 8-60).

Ishii teaches that such TDMA-TDD radio communications can be used for cellular mobile communications (see [0002-0004]).

It would have been obvious for one skilled in the art to implement Sasaki device in view of Wolff et al to be a mobile terminal for used in cellular mobile communications, as taught by Ishii, so that the mobile terminal would have advantageous features of having small size and light weight for carrying out cellular mobile communications.

With such the implementation, Sasaki in view of Wolff et al and Ishii teaches that the device comprises a mobile terminal or a cellular mobile communication device, as claimed.

Allowable Subject Matter

7. Claims 20, 28 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed on 10/26/06 have been fully considered but they are not, in part, persuasive.

-The previous claim objections to claims 3, 10-12, 15 and 18 have been withdrawn since the claimed were amended and overcame the objections.

-Applicant's arguments with respect to claims 1, 13, 19, 27 and 36, are not persuasive. The applicant mainly argues that in Sasaki, a directional coupler is not needed for splitting the local oscillation signal PO to transmission mixer and the first reception mixer. Therefore, Sasaki is not amendable to modification by Wolff et al to incorporate a directional coupler.

The examiner respectfully disagrees. See figure 1, in Sasaki, the PO signal outputted from the local oscillator (20) needs to be split in order to provide the PO signal to both transmission mixer (19) and the reception mixer (29). As shown in the figure, Sasaki invention inherently needs and, therefore, possesses a way for splitting the PO signal. (In order to clarifying the inherency of a need of a way for splitting a signal, the examiner now cites Roppongi (7,039,375) teaches a need of a power splitter (424) for splitting a signal (f422) (see figure 9, and col. 10, lines 10-22)).

Wolff et al teaches using a directional coupler for splitting power of a signal, for instance, a 3-dB directional coupler having 4 ports (1, 2, 3, 4) (see figure 8.10) can be used for coupling, or namely splitting, the signal power of an input signal at port (1) of the 3-dB directional coupler equally to ports (3) and (4) of the 3-dB directional coupler (see page 214, section 8.4.1).

Since Sasaki does not teach in detail how the local oscillator is coupled to said TX path mixer and said RX path mixer for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, it would have been obvious for a person skilled in the art to implement

Sasaki with a directional coupler having 4 ports (1, 2, 3, 4), as taught by Wolff et al, in such a way that one of the two ports (3) and (4) of the directional coupler, e.g., port (3), is connected to the TX mixer, the other of the two ports (3) and (4), e.g., port (4), is connected to the RX mixer and the output (PO) of the local oscillator would be inputted to port (1) of the directional coupler so that with such the implementation, the local oscillator would be coupled to said TX path mixer and said RX path mixer (via the directional coupler) for splitting the signal power of the output (PO) in order to provide the output (PO) for each of said TX and RX mixers, as required.

Furthermore, assume, as the applicant argues, that Sasaki does have his own way to split the oscillation signal PO by fanning out the oscillation signal PO directly, (as shown in figure 1) to both the transmission mixer (19) and the reception mixer (29), namely a directional coupler is not needed for splitting the local oscillation signal PO to transmission mixer and the first reception mixer, the claimed invention is deemed not patentable over Sasaki in view of Wolff et al because of the following reasons. It is well-recognized in the art that using a directional coupler is one among alternatives for splitting a signal.

(In order to clarifying said recognition, the examiner cites Ishii teaching of using a directional coupler as an alternative for splitting a signal (see col. 10, lines 16-32)). Therefore, alternatively, it would have been obvious for one skilled in the art to replace Sasaki way to split the oscillation signal PO with an alternative way of using a directional coupler, as taught by Wolff et al, so that the oscillation signal PO would be split as required.

-The applicant's arguments with respect to claim 4 are not persuasive. The applicant mainly argues that Sasaki, Wolff et al and Vagher do not teach the claimed subject matter "the directional coupler operating frequency range is greater than the output frequency of the local oscillator".

The examiner respectfully disagrees. As set forth above in the Office Action, Sasaki in view of Wolff et al and Vagher teaches a directional coupler can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see Vagher, figures 2 and 3, and col. 5, lines 17-42) in such a way that the directional coupler operating frequency range of the directional coupler would be wider/greater than the output frequency of the local oscillator, as desired, for including the output frequency of the local oscillator

the so that the directional coupler can operate at the output frequency of the local oscillator, as being needed.

With such the implementation, Sasaki in view of Wolff et al and Vagher teaches the claimed subject matter "the directional coupler operating frequency range is greater than the output frequency of the local oscillator" (since the output frequency of the local oscillator is covered/included in said operating frequency wide range).

-The applicant's arguments with respect to claim 6 are not persuasive. The applicant mainly argues that Sasaki, Wolff et al and Vagher do not teach the claimed subject matter "the directional coupler covers dual bands for dual band single output local oscillator configurations".

The examiner respectfully disagrees. As set forth above in the Office Action, Sasaki in view of Wolff et al and Vagher teaches a directional coupler can be configured to have a desired operating frequency wide range (e.g., 969 MHz-1306 GHz) (see Vagher, figures 2 and 3, and col. 5, lines 17-42) which inherently covers possible dual bands lying in said operating frequency wide range wherein the dual bands might happen to be dual bands for dual band

single output local oscillator configurations. In order to clarifying and illustrating said inherency, the examiner cites Snider (6,804,261) teaching dual bands ((1325-1360 MHz) (GSM) and (1405-1480) (DCS)) for dual band single output local oscillator configurations (LO1) (see figure 5, col. 8, lines 57-63), (the dual bands being inherently covered by the frequency wide range (969 MHz-1306 GHz).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In

no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References (2004/0203734), (7,039,375), (6,804,261) and (2006/0087374) are cited in this Office Action because they are pertinent to the claimed method and associated system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanh D. Phu whose telephone number is (571)272-7857. The examiner can normally be reached on M-Th from 7:00-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571) 272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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